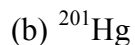
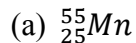


Name \_\_\_\_\_

AP Chemistry

## Types of Radioactive Decay & Nuclear Stability

1) Indicate the number of protons and neutrons in the following nuclei:



(c) Potassium-39

2) Write the balanced nuclear equation for the following processes:

(a) Bismuth-214 undergoes beta production

(b) Gold-195 undergoes electron capture

(c) Potassium-38 undergoes positron emission

(d) Plutonium-242 emits alpha particles

(e) Gold-201 decays to a mercury isotope

(f) Selenium-81 undergoes beta production

(g) Neodymium-141 undergoes electron capture

(h) Strontium-38 decays by positron emission

3) Decay of which nucleus will lead to the following product:

(a) Bismuth-211 by beta decay

(b) Chromium-50 by positron emission

(c) Radium-226 by alpha decay

4) What particle is produced during the following decay processes:

(a) Sodium-24 decays to magnesium-24

(b) Iodine-122 decays to xenon-122

(c) Mercury-188 decays gold-188

5) Predict the type of radioactive decay process for the following radionuclides:

(a)  ${}^8_5\text{B}$

(b)  ${}^{68}_{29}\text{Cu}$

(c) Neptunium-241

(d) Chlorine-39

6) One of the nuclides in each of the following pairs is radioactive. Predict which is radioactive and which is stable and explain:

(a)  ${}^{39}_{19}\text{K}$  and  ${}^{40}_{19}\text{K}$

(b) Magnesium-25 and neon-24

7) Which of the following nuclides have magic numbers of both protons and neutrons:

(a) Helium-4

(b) Carbon-12

(c) Calcium-40

(d) Nickel-58

(e) Lead-208